

Appl. No. : 10/622,084
Filed : July 16, 2003

REMARKS

In response to the Office Action mailed July 13, 2005, Applicant has amended the application as above. Claims 1 and 26 have been amended for clarification unrelated to the prior art and not to narrow their scope. Claims 1-27 are now pending in this application, of which Claims 15-25 and 27 are withdrawn from consideration. No new matter is added by the amendments. Applicant respectfully requests the entry of the amendments and reconsideration of the application in view of the amendments and the remarks set forth below.

Discussion of Rejection of Claims under 35 U.S.C. § 102(b)

Claims 1-3, 6, 11-14 and 26 were rejected under 35 U.S.C. §102(b) as being anticipated by Borden (U.S. Patent No. 5,966,019).

With respect to the independent Claims 1 and 26, Applicant submits that Borden neither teaches nor suggests the claim term “wherein at least the near-surface contribution is substantially eliminated from the predetermined characteristic [of the reflected analyzer beam]” recited in Claims 1 and 26.

First, Borden cannot teach or suggest the removal of a near-surface contribution because no discussion or reference is made about a near-surface contribution to be removed from the reflected analyzer beam in Borden. Though the Examiner cited col. 14, lines 45-48 of Borden, it fails to disclose a near-surface contribution to be removed from the reflected analyzer beam.

Borden discloses a method and system for measuring a property of a semiconductor substrate. In such a system, a generation beam is applied to the substrate to cause more excess carriers to be generated in the substrate, which in turn changes the refractive index of the substrate. An analyzer beam having one polarization and a reference beam having another polarization are then applied to the substrate. The change in the refractive index of the substrate introduces a phase shift between the reflected analyzer beam and the reflected reference beam which is then used to measure the property of the substrate (*see* col. 12, line 47 to col. 13, line 16 of Borden.)

Borden then discloses in one embodiment how to measure the properties of small areas of the substrate, such as the area near the surface, instead of the whole substrate (*see* col. 14, line 43

to col. 15, line 20 of Borden.) In col. 14, lines 45-48, Borden teaches the generation of excess carriers near the surface of the substrate in order to determine the property of the substrate near the surface, i.e., the carrier mobility. The contribution that excess carriers near the surface make to the reflected analyzer beam is a phase shift introduced in the analyzer beam as it is reflected from the substrate. However, Borden does not teach that this contribution be removed from the reflected analyzer beam. In fact, Borden teaches against removing this contribution from being removed. The phase shift is used to measure the property of the substrate. Were the contribution of excess carriers near the surface removed, no phase shift would be introduced into the reflected analyzer beam. Therefore, the measuring system of Borden would not be operable.

Second, Borden fails to teach or suggest how to eliminate the contribution. The examiner cited a filter (222 of figure 8 and 148 of figure 6 in Borden) as a mechanism to eliminate the contribution. Applicant respectfully disagrees with this characterization. Figure 6 of Borden relates to a system which determines a property of the substrate by measuring beams passing through the substrate while Claims 1 and 26 disclose measuring beams reflected by the substrate (see col. 9, lines 46-51 of Borden). The filter 222 of figure 8 is only used to “filter out any residual energy from the generation beam that was reflected back from the substrate” (see col. 14, lines 3-5 of Borden). Borden does not disclose filtering out a near-surface contribution by this filter 222 from the reflected beams.

Therefore, Claims 1 and 26 are not anticipated by Borden. Further, it would not have been obvious to one of ordinary skill in the art to recognize the invention of Claims 1 and 26 in view of Borden alone or in combination with Finarov. Finarov is not related to the determination of the bulk property of a substrate. Finarov also does not disclose the elimination of a near-surface component of a reflected beam.

Dependent Claims

Claims 2-14 are dependent either directly or indirectly on the above-discussed independent Claim 1. Applicant respectfully submits that pursuant to 35 U.S.C. § 112, ¶4, the dependent claims incorporate by reference all the limitations of the claim to which they refer and include their own patentable features, and are therefore in condition for allowance. Therefore,

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Applicant respectfully requests the withdrawal of all claim rejections and prompt allowance of the claims.

Conclusion

In view of the foregoing remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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